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10/553,037	10/11/2005	Ulrike Licht	278600US0PCT	6780
22850 7590 01/23/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER NILAND, PATRICK DENNIS	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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1. The amendments of 10/10/08 and 11/7/08 have been entered. Claims 8-9, 21-38, and 40-56 are pending.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 8-9, 21-38, and 40-56 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

A. The instant claims 8, 21, 27, 29, 54, 55, and thereby the claims which depend therefrom recite molecular weights regarding polymeric compounds and recite "number average molecular weight". There is not basis in the originally filed specification for number average molecular weight. The applicant's arguments regarding page 16, line 6 of the instant specification and the recited DIN are noted. The applicant's arguments show that an average molecular weight can be associated with the OH number but do not establish how that average molecular weight is number average and not weight average or some other type of average molecular weight (z, viscosity, etc.). The examiner conceded in the prior made lack of clarity rejection that an average molecular weight was necessitated since the moiety is polymeric. It remains unclear how the originally filed specification establishes that the molecular weight in

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question is a number average molecular weight. It is noted that polyethers in question are subject to backbiting reactions which give some ethylenic unsaturation which consumes an OH group. It is therefore not clear that the functionality is exactly 2. $\text{OH number} = (56.1(\text{g KOH/mole KOH}) * 1000 (\text{mg/g}) * (\text{number of OH groups per molecule which can be some type of average}))/\text{molecular weight which can be some type of average}$. Not knowing what type of averages are intended makes it impossible to determine the molecular weight type from OH number alone without further information and this further information is not seen at page 16, line 6 of the instant specification. It is not seen what type of average is required by the argued DIN. It is not seen what type of average is required of the argued page 16, line 6 of the instant specification. It is not seen that the OH number of page 16, line 6 is intended to confer any type of relationship to the claimed molecular weight range in question nor to show that the instantly claimed molecular weight range is a number average molecular weight range. It is not even seen that this molecular weight has anything to do with the instantly claimed molecular weight range. It is noted that even if this molecular weight falls within the instantly claimed molecular weight range, it is not necessarily evidence that the exemplified molecular weight is part of the instantly claimed molecular weight range because its polydispersity can be such that the intended molecular weight average type might also be in the instantly claimed molecular weight range though the exemplified molecular weight is not intended to be the molecular weight of the instantly claimed molecular weight range. There is not support in the originally filed specification for the instantly claimed molecular weight being a number average molecular weight. The applicant's arguments in this regard have been fully considered but are not persuasive for the above stated reasons.

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5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 8-9, 21-38, and 40-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/064657 Licht et al. as translated by US Pat. Application Pub. 2004/0077777 A1 Licht et al. until the official translation is received in view of US Pat. No. 5959027 Jakubowski et al. and US Pat. No. 4046729 Scriven et al..

Licht discloses a method of making an aqueous primary dispersion falling within the scope of the instant claims at the abstract; sections [0008]-[0043], particularly [0011] which encompasses the instantly claimed components a and b1, [0016] which relates to the relative amounts of polyols, polyamines, and polyisocyanates, [0017], [0022] which encompasses the instantly claimed molecular weight of component b1, [0023]-[0024] which encompasses the instantly claimed polyesterol of claim 33 when the diol is the ethylene glycol or oligomer thereof of section [0024], [0027] which encompasses the instantly claimed b1 when polyethylene oxide is the polyether used, [0029]-[0030] which also meets the instantly claimed component b1 and the amounts of ethylene oxide units of the very broad ranges of the instant claims when taken with the active hydrogen/NCO ratios, molecular weights of the disclosed polyisocyanates, and

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the molecular weights of the disclosed diols of the reference when these low molecular weight diols are the ethylene oxide oligomers of section [0024], [0031], [0032], [0036]-[0038] which falls within the scope of the particle sizes of the instant claim 34, [0043], page 6, claim 14 which falls within the scope of the instant claim 46 when coupled with claim 13, and the remainder of the document. It is not seen that the dispersing means of the reference use more than the very large amount of shear of the instant claim 28 nor would much shear be required where the ethylene oxide polyethers of the reference are used since the polymers are expected to be liquid at their lower molecular weights and therefore easily dispersed. The reference teaches coating substrates at section [0060].

Licht does not disclose the use of the instantly claimed component c). It is noted that component c is optional in many of the claims and excluded by claim 56. Licht does not disclose mixing the components, heating them, and adding catalyst via the phases according to the instant claims 27 and 54-55.

Jakubowski discloses making high solids aqueous primary polyurethane dispersions by reacting polyisocyanate, polyols including polyether and polyester polyols, and chain extenders which fall within the scope of the instantly claimed component b3 and which may include chemically incorporated ionic and nonionic stabilizing functionalities (column 5, lines 57-60) which fall within the scope of the instantly claimed component c. See the entire document, particularly the abstract; column 1, lines 54-67; column 2, lines 1-67, particularly 1-54; column 3, lines 1-67, particularly 36-67, which encompass the instantly claimed ethylene oxide containing moieties; column 4, lines 1-67, particularly 1-52; column 5, lines 1-67, particularly 1-4, 10-15, and 57-60, which discloses the use of chemically incorporated anionic and nonionic

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moieties to stably disperse the polyurethane of the patentee, and 61-67; column 6, lines 1-67, particularly 1-11 and 53-63, noting the particle sizes and polydispersities thereof of the examples; and the remainder of the document. It is not seen that “primary dispersion” does not include the primary dispersions of Jakubowski.

Jakubowski does not disclose the instantly claimed method of making their polyurethane dispersions.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to use the instantly claimed amounts of ethylene oxide moieties and ionic moieties to stabilize the polyurethane of Licht et al. and to reduce the amount of external emulsifier accordingly because it is well known to use the instantly claimed combinations of ionic groups and ethylene oxide moieties to stably disperse polyurethanes so as to reduce external emulsifier, which is well known to adversely affect film properties and adhesion, as taught by Jakubowski at column 5, lines 57-60 and the fact that the state of the art has been to use both ethylene oxide moieties, in combination with other more hydrophobic moieties, including propylene oxide and other alkylene oxides to stably disperse polyurethanes in water as evidenced by the full disclosure of Scriven et al., particularly the abstract; column 7, lines 44-68; column 8, lines 1-68, particularly 34-67, more particularly 49-51 and 52-55 which encompasses terminating the polyethers with the instantly claimed CH₂OH groups; column 9, lines 1-68, particularly 1-25, more particularly 20-25, which encompasses the instantly claimed polyesterols having the instantly claimed ethylene oxide moieties; column 11, lines 1-68, particularly 1-40 which discloses the instantly claimed component c and its purpose; column 13, lines 1-68, particularly 11-22 column 15, lines 53-68; column 16, lines 1-68; column 17, lines 1-68, particularly 31-53

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of which the clear dispersions are understood by those of ordinary skill in the art to be very small particles, often of only one molecule, which are too small to give the Tyndall effect and which would have the instantly claimed particle sizes; and the remainder of the document and the ordinary skilled artisan, at the time of the instant invention was well aware of the effects of using both ionic and nonionic means to stably disperse polyurethanes in water because their affect on the Hydrophile/Lipophile Balance of the polyurethane and the HLB affect on the stability of the dispersed polyurethane is well known and the patentees encompass the instantly claimed amounts of ethylene oxide moieties and this commonly used means for stably dispersing polyurethanes would have been expected to stably disperse the polyurethane of Licht et al. without the need for external emulsifier while giving the benefits of Licht's method. There are no unexpected results shown, in a manner commensurate in scope with the cited prior art and the instant claims, stemming from the instantly claimed ethylene oxide amounts. The above requires the reacting of the components of the instant claim 8 by the instantly claimed method.

It is not seen that the dispersers of the references cited would use shear above that of the instant claims 9 and 28, particularly where enough hydrophilic portion is present in the polyurethane that it is self dispersing (See Scriven column 5, lines 15-25 and column 17, lines 7-11 and Jakubowski, column 4, lines 23-27 and column 8, lines 20-25) because self dispersing polyurethane reaction mixtures would clearly require little shear to disperse.

Coating substrates according to the instant claims 35-38 is disclosed at Jakubowski, column 7, lines 13-18.

High shear is not required where the polyurethanes have high contents of hydrophilic salt groups and ethylene oxide content since the hydrophilic molecules are readily compatible with

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water as understood by the ordinary skilled artisan, though most of the instant claims do not exclude high shear. It is noted that the instant claims and the prior art encompass polyurethanes which are self emulsifying.

It is not seen that the average particle sizes of the patentee do not correspond to the z average particle sizes of the instant claims 26 and 34, particularly where the larger amounts of salt and ethylene oxide units are present which make the polyurethane more compatible with water, i.e. the polyurethane is approaching solubility. Column 12, line 11 of Scriven falls within the scope of the instant claims 39-42.

Component c remains optional in the above claims 27 and those dependent therefrom.

Further consideration of the limitations of amended component c shows that the scope of general formula $RG-R^1-DG$ where there is more than one RG as encompassed by the language "at least one isocyanate reactive group" encompasses the compounds of Scriven, column 11, lines 16-40 cited above because the claimed formula does not recite what carbons the moieties RG and DG are attached to on R^1 , particularly in view of page 9, lines 15-35, particularly dimethylol propionic acid, of the instant specification which defines the claimed formula as encompassing the compounds of Scriven, column 11 et seq., as cited above, having NCO reactive groups and ionic groups. In view of this interpretation of the instantly claimed component c, the applicant's arguments regarding the identity of the claimed component c do not overcome this rejection.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to mix the above discussed components and water, heat them to reaction temperatures of the cited prior art and then add urethane forming catalyst that will go into

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the water phase, according to the instant claim 27, because such means of mixing will exclude premature reaction of the urethane forming ingredients and will give only the well known effects of the prior art urethane forming catalysts (e.g. Scriven, column 14, lines 20-27) including the ability to lower the reaction temperature and save energy by lowering the activation temperature of the urethane reaction, as is well known to the ordinary skilled artisan.

The applicant's argument that Licht excludes the instantly claimed component c is not persuasive. Licht does not teach away from its use. Licht states that it is not necessary due to their use of emulsifiers. However, the motivation for using the chemically incorporated emulsifying groups rather than external emulsifiers that bleed and materially affect film properties that was present at Scriven's time is equally applicable to Licht and possible therein as shown by Jakubowski, as discussed above. As such motivation that meets the requirements of *Graham v. Deere* and MPEP 2141 is met by the above rejection particularly in view of the "KSR" decision. The cited prior art encompasses the other claimed reactant parameters for the reasons stated above and the teachings of the cited prior art.

It would have been obvious to the ordinary skilled artisan at the time of the instantly claimed invention to add the catalyst and then heat or to add the catalyst after heating, according to the instant claims, because it is not seen that the order of these steps gives an unexpected result or any difference within the scope of the instant claims, which recite no temperatures per se and the reaction will proceed at ambient temperatures without catalyst, and the instant claims recite no time of heating, which due to the reaction

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kinetics, is material to the outcome of the heating and catalyst used as is catalyst amount, which is not specified. The usual urethane catalysts of the urethane art have hydrophilic parts and hydrophobic parts (e.g. Scriven, column 14, lines 20-22) and the well known tertiary amine urethane catalysts and thus are expected to go into either of the aqueous and oil phases thus meeting these phase aspects of the instant claims. See 2144.04 C. Changes in Sequence of Adding Ingredients Ex parte Rubin , 128 USPQ 440 (Bd. App. 1959) (Prior art reference disclosing a process of making a laminated sheet wherein a base sheet is first coated with a metallic film and thereafter impregnated with a thermosetting material was held to render prima facie obvious claims directed to a process of making a laminated sheet by reversing the order of the prior art process steps.). See also In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results); In re Gibson, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is prima facie obvious.).

The applicant's arguments have been fully considered but are not persuasive for the above reasons. This rejection is therefore maintained.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick D. Niland whose telephone number is 571-272-1121. The examiner can normally be reached on Monday to Thursday from 10 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Patrick D Niland/
Primary Examiner
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